MASTER OF ENGINEERING MANAGEMENT (ONLINE)

Overview

Summary

- Degree offered: Master of Engineering Management (MEM)
- Registration status options: Part-time
- Language of instruction: English
- Program option (expected duration of the program):
  - within two years of full-time study
- Academic units: Faculty of Engineering (https://engineering.uottawa.ca/), Telfer School of Management (http://www.telfer.uottawa.ca/en/).

Program Description

The Engineering Management Program offers an online Master of Engineering-Management and a Graduate Diploma online Engineering Management. The program is supervised by a committee composed of representatives from the Telfer School of Management and of the Faculty of Engineering.

Main Areas of Research

- Data analytics
- Production innovation management
- Technology project management
- Operations management

Learning Outcomes

The objective of the Master of Engineering Management program is to develop the knowledge and skills of engineers and scientists in the management of people, projects, resources and organizations in technical environments.

Other Programs Offered Within the Same Discipline or in a Related Area

- Master of Engineering Engineering Management
- Graduate Diploma Engineering Management (Online)
- Graduate Diploma in Engineering Management

Admission Requirement

For the most accurate and up to date information on application deadlines, language tests and other admission requirements, please visit the specific requirements (https://www.uottawa.ca/graduate-studies/programs-admission/apply/specific-requirements/) webpage.

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Fees and Funding

- Program fees:

  The estimated amount for university fees (https://www.uottawa.ca/university-fees/) associated with this program are available under the section Finance your studies (http://www.uottawa.ca/graduate-studies/programs-admission/finance-studies/).

  International students enrolled in a French-language program of study may be eligible for a differential tuition fee exemption (https://www.uottawa.ca/university-fees/differential-tuition-fee-exemption/).

- To learn about possibilities for financing your graduate studies, consult the Awards and financial support (https://www.uottawa.ca/graduate-studies/students/awards/) section.

Notes

- Programs are governed by the academic regulations (http://www.uottawa.ca/graduate-studies/students/general-regulations/) in effect for graduate studies.
- In accordance with the University of Ottawa regulation, students have the right to complete their assignments, examinations, research papers, and theses in French or in English.

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Program Requirements

Requirements for this program have been modified. Please consult the 2025-2026 calendars (https://catalogue.uottawa.ca/en/archives/) for the previous requirements.

Master's with Coursework

To receive the Master of Engineering Management, a student enrolled in the program must successfully complete 30 units of academic work: 12 units of compulsory courses and 18 units of optional courses.

Students must meet the following requirements:

Compulsory Courses:

MEM 5100	Introduction to Engineering Management	3 Units
MEM 5241	Principles of Accounting and Finance for Engineers	3 Units
MEM 5231	Principles of Management and Leadership for Engineers	3 Units
MEM 6260	Project Management	3 Units
18 optional course units from the list of optional courses		18 Units

List of optional courses

DTO 5150	Topics in Digital Transformation and Innovation	3 Units
DTO 6106	User Research and User Experience Principles and Practice	3 Units
DTO 6107	Interaction Design and Design Thinking	3 Units
DTO 7103	Visual Literacy and User Experience Design Principles	3 Units
MEM 5111	Creativity and Innovation	3 Units
MEM 5119	Managing complexities in projects and programs	3 Units
MEM 5120	Product Development and Management	3 Units
MEM 5121	Taguchi Methods for Engineering R D	3 Units
MEM 5122	Operational Excellence and Lean Six Sigma	3 Units
MEM 5150	Topics in Engineering Management	3 Units
MEM 5265	Business Intelligence and Performance Management	3 Units
MEM 5280	Principles of Operations Management	3 Units
MEM 5300	Data Mining for Business Analytics	3 Units
MEM 6100	Initiation and Design of Complex Projects and Programs	3 Units
MEM 6281	Supply Chain Management	3 Units
MEM 6285	Risk Management and Delivery of Complex Projects and Programs	3 Units
MEM 6287	Advanced Data Analytics	3 Units
MIA 5150	Topics in Interdisciplinary Artificial Intelligence	3 Units
MIA 5310	Fundamentals of Cybersecurity	3 Units
MIA 6160	Cyber Security Strategy, Architecture and Governance	3 Units
MIA 6360	Artificial Intelligence and Cybersecurity	3 Units

Research

Research at the University of Ottawa

Located in the heart of Canada's capital, a few steps away from Parliament Hill, the University of Ottawa ranks among Canada's top 10 research universities. Our research is founded on excellence, relevance and impact and is conducted in a spirit of equity, diversity and inclusion.

Our research community thrives in four strategic areas:

- Creating a sustainable environment
- Advancing just societies
- Shaping the digital world
- Enabling lifelong health and wellness

From advancing healthcare solutions to tackling global challenges like climate change, the University of Ottawa's researchers are at the forefront of innovation, making significant contributions to society and beyond.

Research at the Faculty of Engineering

Areas of research:

- Chemical and Biological Engineering
- Civil Engineering
- Electrical Engineering and Computer Science
- Mechanical Engineering

For more information, refer to the list of faculty members and their research fields on **Uniweb**.

IMPORTANT: Candidates and students looking for professors to supervise their thesis or research project can also consult the website of the faculty or department (https://www.uottawa.ca/study/graduate-studies/academic-unit-contact-information/) of their program of choice. Uniweb does not list all professors authorized to supervise research projects at the University of Ottawa.

Courses

MEM 5100 Introduction to Engineering Management (3 units)

Introduction to management and engineering management. The structure of engineering organizations. The importance of accounting and finance, interpersonal skills, decision-making under conditions of uncertainty. The legal, ethical, technological and global context of management decision-making. Planning and control in engineering management.
Course Component: Lecture

MEM 5111 Creativity and Innovation (3 units)

Factors which enhance individual and group creativity in organizations and its translation into successful technological innovations. The invention/innovation process. Creative problem-solving techniques. Entrepreneurship. Organizational climate for stimulating invention. Management of research and development. Project selection. Elements of financial decision-making. Organization design for innovation.
Course Component: Lecture

MEM 5119 Managing complexities in projects and programs (3 units)

This course is focused on the management of the delivery mechanisms in complex projects and programs: the preparation, design and response to request for proposals, effecting benefits-based procurement, designing performance-based contracts, managing supply chain relationships, implementing the enabling enterprise-level systems and the delivery assurance culture required for success.
Course Component: Lecture

MEM 5120 Product Development and Management (3 units)

Product development and management, including engineering aspects of the process. The latest trends and practices, insight into processes which facilitate product management and development, understanding of product management and development practices via case studies, development of the leadership and management skills required to create, initiate, develop, bring to market and implement new technological products and services.
Course Component: Lecture

MEM 5121 Taguchi Methods for Engineering R & D (3 units)

The role of experiments in product innovation. Taguchi/Plackett-Burman methods for design of experiments. Analysis of means. Analysis of variance. Contrasts and multifactorial ANOVAs. Fractional factorial designs. A-priori and post hoc pooling, scree plots. Numerous application examples focused on engineering design.
Course Component: Lecture

MEM 5122 Operational Excellence and Lean Six Sigma (3 units)

Lean Six Sigma Green Belt tools and techniques, operational efficiency, waste and variability reduction, continuous improvement, the pursuit of perfection. DMAIC (define, measure, analyze, improve and control), process mapping, data collection and analysis, root cause problem solving, the cost of quality, mistake proofing, change management.
Course Component: Lecture

MEM 5150 Topics in Engineering Management (3 units)

Recent and advanced topics in the field of Engineering Management and its related areas. Topics vary from year to year.
Course Component: Lecture

MEM 5231 Principles of Management and Leadership for Engineers (3 units)

The difference between management and leadership. Development of increased skills and understanding of participant preferences for the management of interpersonal and team-based issues and processes in a work environment. Special focus on diversity and ethics in a team environment. Effective business communications, including skills for delivery of high quality business presentations; exposure to common business software for inclusion in the student's professional toolbox.
Course Component: Lecture

MEM 5241 Principles of Accounting and Finance for Engineers (3 units)

The difference between accounting and finance. The role of the accounting function internal to the organization. A broad view of managerial accounting, introducing various costing systems, cost behaviour patterns, cost structures, budgeting and variances. The use of accounting for the evaluation of product, managerial and divisional performance thus helping students to understand what accounting can do for decision makers and how accounting choices affect decisions. Emphasis on the strategic importance of aligning accounting systems with firm technologies and goals. Financial management and the financial environment. Risk and rates of return. Discounted cash flow analysis and profitability indicators of potential capital investments.
Course Component: Lecture

MEM 5265 Business Intelligence and Performance Management (3 units)

Role of information in organizations. Overview of systems used to capture, transform and disseminate information to managers. Linkages between information and knowledge management. The process of knowledge creation and application within and among organizations. Business Intelligence (BI) as a concept. Business intelligence and performance management approaches at operational levels in the organization. Frameworks such as the Balanced Score Card and Quality Management will be covered. Review of major BI tools and methods. Identification of the right types of BI for different types of decision making environments.
Course Component: Lecture

MEM 5280 Principles of Operations Management (3 units)

Introductory course providing a broad knowledge in the field of operations in a realistic, meaningful and practical manner while explaining the different value-creation resources to any organization and how they form a solid operations framework. Operations Management (OM) is a subject that includes accounting, industrial engineering, management, supply chain management, purchasing, logistics, process engineering, manufacturing, product and service quality, and customer relationship management.
Course Component: Lecture

MEM 5300 Data Mining for Business Analytics (3 units)

This course focuses on the application of data mining techniques and predictive analytics to business problem-solving. It covers key algorithms and techniques for extracting meaningful insights from business data, including data preprocessing, decision trees, neural networks, k-nearest neighbors, clustering, and association rules. Students will gain hands-on experience with data mining tools and software, applying these techniques in managerial contexts such as customer relationship management, marketing, sales, credit scoring, and churn analysis.
Course Component: Lecture

MEM 6100 Initiation and Design of Complex Projects and Programs (3 units)

This course outlines the unique characteristics of complex projects and programs. Students will learn about methodologies and techniques to characterize the complexity of projects and programs, advanced stakeholder engagement, strategic analysis for complex projects and programs, adaptive planning techniques and organizational governance models for benefits realization, and the leadership of teams.
Course Component: Lecture

MEM 6260 Project Management (3 units)

Project management methods based on standards, including the Guide to Project Management Body of Knowledge (PMBOK) of the Project Management Institute (PMI); project success and stakeholders; project charter and project plan; managing a project throughout its life cycle (identification, design, planning, realization and close-out). Projects that have incomplete and/or unstable requirements such as IT projects or software development projects. Topics covered include: portfolio management; risk management; determining requirements and solutions; quality management; communication management; design methods (Quality Function Deployment, Value Analysis); iterative and adaptive project management; fast tracking and concurrent methods of project management.

Course Component: Lecture

MEM 6281 Supply Chain Management (3 units)

Overview of supply chain management as a framework for analyzing operations management situations and as a basis for general management situations. Major elements of the supply chain. Leading edge thinking on supply chain strategy and practical tools and methods for its implementation.

Course Component: Lecture

MEM 6285 Risk Management and Delivery of Complex Projects and Programs (3 units)

This course provides an in-depth exploration of risk management within the context of complex projects and programs. Candidates will learn advanced techniques for identifying, assessing, and prioritizing both qualitative and quantitative risks in complex project environments. The course also emphasizes the mathematical modeling of risk assessment, enabling students to apply quantitative methods to evaluate and mitigate risks effectively. Key topics include risk management planning, risk assessment, and the development of contingency plans, with a focus on integrating risk management into project delivery. Additionally, the course discusses governance frameworks and the role of risk management in ensuring successful project outcomes. Real-world case studies will be analyzed to illustrate the application of risk management principles across various stages of the project lifecycle, particularly in high-complexity environments. The course includes a final project where candidates will apply risk management techniques to a complex project or program, followed by a presentation.

Course Component: Lecture

MEM 6287 Advanced Data Analytics (3 units)

Fundamentals of Big Data as well as big database management (NoSQL) with applications in engineering and management. Review of the supporting technologies. AI concepts for advanced analytics with applications in engineering and management.

Course Component: Lecture